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One hundred and eighty-six years after his death, A. D. 1000, the seal of Charlemagne's grave was broken for the first time. The young and enthusiastic Emperor Otho III., who rebuilt the church, which had been partially destroyed by the Normans, had the vault opened. He took a piece of the holy cross away with him, as a sacred memorial of his great predecessor. It was also, probably, at this time that the sceptre, crown, and pouch were removed, to be used at the coronation of subsequent Roman emperors. They are now kept at Vienna. The marble chair remains, and is still shown at Aix-la-Chapelle. The vault was sealed up once more and remained undisturbed for a period of one hundred and sixty-five years. At that time another great Emperor, Frederic Barbarossa, had it opened again, and by his command the remains of the body were laid in a coffin, and removed to a grander and richer tomb. His veneration for this most celebrated of his predecessors was so great, that he induced the Pope of his creation, Pascal III., to signalize the gratitude of the pontifical chair for its most glorious protector by a canonization of the hero, after the lapse of more than three hundred years.

ART. VII.—1. *The Elements of Intellectual Philosophy.* By FRANCIS WAYLAND, President of Brown University, and Professor of Moral and Intellectual Philosophy. Boston: Phillips, Sampson, & Co. 1854. 12mo. pp. 426.

2. *Philosophy of the Mechanics of Nature, and the Source and Modes of Action of Natural Motive Power.* By Z. ALLEN. Illustrated by numerous Wood-cuts. New York: D. Appleton & Co. 1852. 8vo. pp. 797.

THE authors of these volumes need no introduction from us. They are already well and favorably known to the public. The published works of Dr. Wayland—his excellent treatises on Moral Science and Political Economy, his admirable volumes of Sermons, and, more recently, his interesting

Memoirs of Dr. Judson — have secured for him a wide and enviable reputation as an author, while his position for more than a quarter of a century at the head of one of the oldest and most honored colleges of New England, and his eminent ability as an instructor, have made his name and fame household words in every part of the land.

Mr. Allen, too, has repeatedly appeared before the public as an author. His "Practical Tourist," an agreeable book of travels, had in its time an extensive circulation; and his "Manual of Improvements in the Industrial Arts," intended especially for mechanics and manufacturers, is understood to have rendered important aid to these classes. In the present work, we have the fruit of more extended research and of riper investigation, as well as of loftier endeavor. Its aim is rather philosophical than practical. It seeks to unveil the hidden sources of all material power, rather than to furnish guides for its economical applications. It is the development of one great idea, which finds adequate expression only in a volume of seven hundred and ninety-seven pages, and about which all the physical sciences gather in support and illustration.

The circumstances under which the work was produced impart to it additional interest. It was not a task imposed by the necessities of professional position. No hope of pecuniary advantage mingled with the motives which prompted it. A pure and simple love of the truths unfolded was sufficient to repay every sacrifice, and to render the labor, although continued through long years of patient thought and study, its own exceeding great reward. It was composed during periods of leisure gained from active business pursuits, — chiefly in the hours of early morning, when the faculties invigorated by brief slumber were prepared for their finest action, — a circumstance to which may be due, in part at least, the auroral freshness that breathes from its pages. When the work of composition was completed, the resources of a private fortune were put in requisition, that others might experience the philosophic joy and reflect it back by sympathy.

The theory of natural motive-power unfolded in this volume assumes the entire *passivity* of matter. This ordinarily

recognized principle of natural philosophy is extended to the domain of chemistry, and the material particles are supposed to be as utterly *inert* as the masses built up from them. The idea of *inherent forces* — of *attractions* and *repulsions*, of *gravity*, *cohesion*, and *chemical affinity* — is discarded, as wholly incompatible with the nature of matter. The component atoms of a body can no more possess the power of self-motion, than the body itself. Every change — whether from rest to motion or from motion to rest — must be impressed upon them by forces from without. The only power or capability which we can rationally ascribe to the atoms is that of receiving, modifying, and transmitting these forces. The sun is the great primary source of all the physical activities of which our globe is the theatre. Impulses of mechanical force are continually emanating from that mighty orb. Propagated through a universally diffused electric medium, they reach the earth, where, modified by the several elementary and compound substances, they appear under as many different forms as these exhibit powers and properties. Oxygen, hydrogen, carbonic acid, and ammonia are subtile mechanisms, each dependent for its power of changing the direction of the impulses reaching it upon the peculiar grouping of its component atoms. Light, heat, electricity, magnetism, cohesion, and chemical affinity are only different exhibitions of force, whose characters are severally determined by these mechanisms. They are readily convertible into one another, and are all traceable, either directly or indirectly, to the sun.

The existence of a universally diffused electric fluid is inferred from the necessity of some medium for transmitting through space the impulses of gravity, as well as from the positive proofs of the existence of such a fluid around and within the earth. Although a species of matter, it is supposed to possess perfect mobility, and to be capable of propagating without loss or diminution whatever impulses are communicated to it; and as it fills all space, such impulses when once imparted must continue to course and recourse its soundless depths through all time. They can no more be lost than matter can be lost. They must be as indestructible as

the fluid which they traverse. They can be annihilated only by the fiat of the Almighty.

But bodies moving rapidly through the electric fluid disturb, as experiment shows, its equilibrium, and develop impulses of force. May we not, therefore, suppose the so-called forces of nature to be but diffusions of the strength of that arm which launched the planetary orbs in space, and gave to each its proper motions? May not the tide of life and motion, ever ebbing and flowing within and around us, be only ceaselessly recurring waves of a divine energy poured into our system at the time of its creation?

Such in outline is Mr. Allen's Philosophy of the Mechanics of Nature. Whether true or false, the conception of the material universe presented by it is one of surpassing simplicity and grandeur. Although some may not be disposed to grant the postulate upon which the system is based, and others may call in question the logical processes connecting its several parts, no one can fail to recognize in it proofs of high creative power associated with rare philosophic genius. Considered as a theory for the explanation of phenomena, — the only light in which we suppose its author to regard it, — it is to be judged of solely by its adequacy and its simplicity. All such theories must, from the nature of the case, be incapable of demonstration. They relate to the causes or essences lying back of the phenomena, and consequently wholly hidden from human view. So long as they explain all the known facts in a natural and simple manner, they are to be regarded as sound and legitimate. When from the progress of discovery they have ceased to do this, they must be set aside, and others sought to take their places.

That the physical sciences have outgrown many of the hypotheses still connected with them, — that for some time past they have been advancing in spite of these hypotheses, rather than through them, — will, we think, be generally admitted. More especially is this true of the branches relating to what are called the imponderables. The suppositions made for explaining the laws of light, heat, electricity, and magnetism, although originally simple and satisfactory, have taken on so many additions in accommodating themselves to new phases

of these sciences, that they no longer conform to any of the requirements of a good theory. They are inadequate. They are complex. They are contradictory. The rich veins of truth to which they originally pointed have been exhausted, and they now serve only to prolong research in unprofitable directions. Instead of aiding, they hinder discovery by blocking the entrance to the paths that lead to it. Nor do we believe that any great advance will be made in this department of human knowledge until these obstructions shall be removed, — until some Samson arise, who, breaking the cords of theory and shaking himself free from the withes of hypothesis, shall bear away the gates of Gaza, and open new fields for investigation. Whether this has been accomplished in the work before us, must be left for time to determine.

But whatever may be thought of Mr. Allen's Philosophy of the Mechanics of Nature, the generalizations connected with it are exceedingly beautiful, and are, moreover, in strict accordance with facts, so far as made known by science. They will constitute in the estimation of many, we presume, the most valuable portion of his labors. We can only indicate them in the briefest manner.

Two processes, not only entirely dissimilar, but directly opposite in character and tendency, are everywhere in progress, — *oxidation* and *deoxidation*. The former occurs in ordinary combustion, in the corrosion of metals, in the wasting of animal tissue, and in the decay of all organic bodies. It is always attended by an exhibition of force varying in character according to circumstances. Steam power is due to the oxidation of the wood or coal placed under the boiler of the engine. Electro-magnetic power is due to the oxidation of the zinc element of the battery. Animal power is due to the oxidation of brain and muscle, and not to the will, which merely determines its manifestation.

Deoxidation is confined to the leaves of plants. In these, under the influence of the sun's rays, carbonic acid, and water, the sulphates and the phosphates undergo resolution. The greater part of the oxygen is thrown off, while the carbon, the hydrogen, the sulphur, and the phosphorus are wrought into the vegetable tissues. These substances all exist naturally in

the state of oxides, and when reclaimed from that state more or less speedily return to it. The leaf of the plant is an apparatus specially devised for the application of sun-power to reclaiming them. All the vegetable products have been thus deoxidized, and may consequently be regarded as representatives of sun-power. Brain and muscle built up from these products also represent sun-power. Charcoal, and metals reduced from the state of ores by it, represent sun-power. The beds of bituminous and anthracite coal found in different parts of the earth—all of vegetable origin—represent sun-power. Steam-power, electro-magnetic power, and animal motive-power, resulting from the return, under different circumstances, of these substances to the state of oxides, are all, therefore, representatives of sun-power; or, adopting the theoretical views of Mr. Allen, they *are* sun-power modified by the material mechanisms through which it is transmitted.

The power of wind and of running water is also traceable, through a different channel indeed, to the same source. The currents of the atmosphere arise from disturbances of its equilibrium by solar heat. The currents of the ocean have a similar origin. Rivers are waters on their return from regions whither they have been borne through the agency of heat. Wind-power and water-power, therefore, still represent sun-power; or, as Mr. Allen would say, *are* sun-power modified in its transmission through material mechanisms.

Man cannot originate force. He may discover and lay open the natural sources of motive-power lying around him, but he can create no new sources. Even volition, which metaphysicians have been accustomed to regard as the type of all proper causation, and from which many would derive the only idea of power, merely determines its manifestation. It is the mere *touch* of the key by the *operator* of the telegraph. Without a supply of motive-power in the brain, the will could as easily create an arm as move it.

Nature cannot originate force. The different forms of matter, whether ponderable or imponderable, can only receive and propagate it. As well might we suppose the elements self-formed as self-moved; as rationally ascribe to them spontaneity of origin, as spontaneity of motion. The varied impulses

to which they are continually yielding must all come from without. Every form of motive-power, wherever appearing, or however emerging, is but the welling-up of sun-power; and sun-power is but the ceaseless flux and reflux of a force divinely imparted to our system at the time when the morning stars sang together, and all the sons of God shouted for joy.

The work of Dr. Wayland is designed not so much to advance the science of Intellectual Philosophy, as to present its known and admitted truths in a simple and accessible form. Although well adapted to interest the general reader, it is intended more especially for the college student; and it is in the character of a text-book, chiefly, that we should regard it, if we would justly appreciate its merits. In the Preface the author says: "I have not entered upon the discussion of many of the topics which have called into exercise the acumen of the ablest metaphysicians. Intended to serve the purposes of a text-book, it was necessary that the volume should be compressed within a compass adapted to the time usually allotted to the study of this science in the colleges of our country. I have, therefore, attempted to present and illustrate the important truths in intellectual philosophy, rather than the inferences which may be drawn from them, or the doctrines which they may presuppose. These may be pursued to any length, at the option of the teacher." The course adopted in this respect we believe to be a wise one. In addition to the cogent reasons assigned for it, others, of almost equal weight, present themselves. Even if, in the distribution of the brief period allotted to a college course, among the different branches of knowledge claiming attention, a larger portion of time were allowed to the metaphysics, we should doubt the expediency of introducing classes to the higher and more difficult problems of the science. As a general thing, they are not prepared for them. With here and there an individual exception, they have neither the age nor the mental training fitting them for such inquiries. As well might the young geometer be initiated into the mysteries of the calculus, or of the *Mécanique Céleste*. The power of noting, comparing, and analyzing the mental processes is of comparatively late growth. The mind is at first occupied exclusively with the outward

and sensible, and it is only after long-continued and patient effort that it is able to attend to its own acts and states so as to gain an accurate knowledge of them, or to comprehend the terms by which they are designated. In the prosecution of no other science is the student in so great danger of mistaking words for ideas; in no other science are such mistakes so difficult to be corrected; and in no other are they liable to prove so fatal. It is not simply that the curiosity is dulled, and a habit formed of being satisfied with the mere symbols of knowledge; that the mind ceases to feel the quickening impulses arising from the joyous, exultant perception of truth, and becomes accustomed to act mechanically and through formulæ; that originality is destroyed, and the power of real, genuine thinking lost. These evils may show themselves in any part of the academical course; and the extent to which they are actually experienced is frequently such as seriously to impair the value of a college education, and to constitute one of the strongest objections to the ordinary modes of conducting it. Consequences far more disastrous are liable to follow the confounding of words with ideas, and the substitution of mere signs for the things signified, by the student in intellectual philosophy. This science discloses the sources of our knowledge, and indicates the grounds for confidence in it. It traces our beliefs to the several stocks from which they spring, and assigns to each its proper authority. It examines the foundations of our faith, and furnishes criteria for the decision of questions involving the whole future of our being. Consequently, any want of distinctness here, any confounding of thought and expression, any blending of fact with hypothesis, of the phenomena revealed in consciousness with theories designed to explain them,—any commingling of well-established doctrines, truths of assured certainty, with questions of difficult and doubtful disputation,—not only endangers the intellectual habits of the pupil, but exposes to peril his moral and religious well-being. However gratifying, therefore, it might be to the admirers of Dr. Wayland—among whom we claim a place—to have his matured views of the problems chiefly occupying the German philosophies, it is not in a college text-book that they would either look for them or desire to see them.

Besides the negative merit to which allusion has been made, the work possesses other and stronger recommendations of a positive character. Not only is it a perfectly safe book to place in the hands of the student, but it is admirably fitted for his use. The order is natural, the method is simple, and both the language and the illustrations are remarkable for their clearness. The facts of the science are well grouped, and their relations to one another are exhibited in a broad and clear light. The truthfulness of the mental constitution is taken for granted. No guaranties are sought for the knowledge acquired under it. The testimonies of both reason and the perceptive faculties are received as trustworthy, and as of ultimate authority on the subjects to which they relate. We cannot doubt them if we would; and were proof required, it would be impossible to give it. The external world exists. Matter is in reality what our senses and the investigations of science lead us to believe it. Qualities imply substance. Powers cannot exist by themselves. There must necessarily be that to which they belong, and by which they are manifested. Every change supposes a cause; and like causes under like circumstances must produce like effects. The question whether the ideas derived through the senses may not be illusory; or whether the intellectual intuitions be not mere regulative principles of thought, without any objective validity, is not entertained. These and other analogous inquiries are excluded, by placing all knowledge, natural as well as revealed, on the common ground of faith in the Divine veracity.

The doctrine of perception maintained is substantially that of Reid and Stewart, as we understand these philosophers, and not the immediate, presentive perception which Sir William Hamilton would impose upon them, and which he himself labors so earnestly, though we think ineffectually, to establish. The cognition of external existence is not direct. The mind perceiving and the object perceived are not in immediate relation. They do not come together face to face. There are always interposed between them certain physical and organic media, through which alone the perceptive cognitions are awakened. The existence as an *outward reality*

of objects with qualities corresponding to these cognitions, is inferred from the truthfulness of the perceptive faculties; or in the last analysis, as we have said, from the attributes of Him who, in forming the senses, we must believe, designed them to be inlets of true knowledge. The philosophical system of Dr. Wayland, therefore, is a mode of what the distinguished Scottish metaphysician denominates *cosmô-thetic idealism* or *hypothetical realism*, and not his own *natural realism*.

Neither has he followed the latter eminent authority in his doctrine of intellectual intuitions, or original suggestions, as he prefers to call them. These are not derived from a negative source. They do not arise from limitations of the mental faculties. They are not corollaries from the conditioned in thought under the law of relativity. They are not beliefs imposed through the weakness of the human intelligence. They do not spring up in the mind from an incapacity to conceive their contraries. They are direct affirmations of the reason, clear and explicit declarations of the intelligence, to every rightly constituted mind, "the unanswerable evidence of their own truth." They have the same guaranties, derived from the same source, as our other knowledge.

Not the least valuable portions of this excellent work are those relating to the improvement of the mental faculties. The long experience of Dr. Wayland as an instructor gives him peculiar advantages in speaking on this subject, while his rare success in the culture of his own powers, as well as in training the minds of others, lends weight and authority to every suggestion. The section on the improvement of the memory is a perfect storehouse of practical suggestions, deserving the gravest consideration of every one who would either widen his intellectual resources or gain a more perfect command of the knowledge already possessed. The directions contained in the section on the improvement of the reasoning powers are equally worthy of attention. In speaking of the culture of the faculties specially employed in discovery, he says:—

"Analysis, or the power of distinguishing and separating from each other things which differ, may be employed either objectively or sub-

jectively, as we are inquiring into the qualities and relations of the world without us, or the energies and relations of the world within us.

"So far as the accurate observation of the external world is concerned, much depends upon the delicacy of our senses, but probably no less upon the earnest attention with which we use them. A listless, careless observer never discovers anything. It is only by intense direction of the mind to the objects of our inquiry, that we are able to detect changes and relations which have been hidden from preceding observers. Truth reveals herself not to those who pay her mere formal and perfunctory service, but to those who render to her the earnest and heartfelt homage of the whole soul.

"Acuteness in the analysis of mental phenomena requires an equal earnestness, though it is differently directed. We here find it necessary to cultivate the habit of withdrawing from all external objects, and fixing our attention on the revelations of our own consciousness. Few men can do this without long-continued and patient effort. With such effort, however, most men can attain to it. We must learn to look calmly and steadily upon a mental phenomenon. If there appear in it the slightest indications of complexity; if, when examining it from different points of view, the least shade of difference be cognizable in our consciousness; or if, on comparing two forms of thought, which seemed to us identical, there arises within us the intellectual feeling of dissimilarity, we must pause until we are thoroughly satisfied on the subjects of our inquiry. It is by listening to the first suggestion of a difference, that we learn to determine the character and relations of our mental phenomena.

"If we would enlarge our power of generalization, I know of no better method than to study the generalizations of nature. Admire lessons of this sort are found in the natural sciences, — chemistry, physiology, geology, etc. No finer exercise for the power of generalization can be desired, than to take a single important chemical law, and trace out its operations on the vast and the minute throughout the kingdom of nature. Having become familiar with these wide-spread classifications, we shall be the better able to pursue the generalizations of the subjective. We may then take an intellectual or moral law, and, having clearly marked out its nature and limitations, follow out its effects on the character of individual and social man. The light which will thus dawn on the mind will frequently astonish the student himself. Patient thought in this direction will furnish explanations of phenomena, and suggest rules of conduct, which would hardly reveal themselves to any other mode of investigation.

"To improve the power of philosophical combination, we need, most
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of all, to study the actual combinations of nature. The more familiar we become with them, the clearer will be the light shed upon the unknown. Much may also be learned from the lives of those who have been so fortunate as to extend the limits of human knowledge. By observing the manner in which they have labored, we may hope to be able to follow their example." — pp. 199–201.

"If these remarks be true, they throw some light upon the subject of education. The power of forming conceptions which shall lead to discovery in science, or to the practicable in action, is clearly of vast importance. Can this power be cultivated? On this question there can be no doubt. It steadily increases with the progress of the human mind. We naturally inquire whether the cultivation of this element of intellectual character has been regarded with sufficient attention by those who form our courses of higher education. A large part of the studies which we pursue add very little to our power of forming conceptions of any character whatever. A larger infusion of the study of physical science, not merely as a collection of facts, but as a system of laws, with their relations and dependencies, would be of great value in this respect. We thus study the ideas and conceptions of the Creator. We become acquainted with his manner of accomplishing his purposes, and learn, in some measure, the style of the Author of all things. Surely, this habit of mind must be of unspeakable value to a philosopher in the discovery of truth, or to a man of affairs in devising his plans, since these can only succeed as they are in harmony with the designs of infinite wisdom and benevolence." — pp. 385, 386.

Doubt is expressed of the propriety of giving to mathematical studies the prominent place which they usually occupy in our systems of education. Although admirably fitted for the earlier stages of mental discipline, they are supposed not to be so well adapted to the highest ends of intellectual culture.

"On the use of the mathematics for the purpose of intellectual cultivation, however, the highest authorities on the subject of education differ. Sir. W. Hamilton contends, with great power and exuberance of learning, that they are, of all intellectual pursuits, the least adapted to produce the effect so commonly ascribed to them. It must be admitted that they discuss the relations of nothing but quantity, and the simplest of these relations; and that the matter of which they treat, and the mode in which they treat it, are entirely unlike those which must be employed in the affairs of life and the investigations of the other sciences. Whoever will read this very able discussion will at least be convinced that the ordinary opinion on the universal adapted-

ness of the mathematics to mental discipline requires a thorough re-examination. It is also a duty manifestly imposed upon teachers to consider this question with a mind unbiased by preconceived opinions, and observe carefully the effect of this study on the reasoning powers of their pupils. In all our institutions of learning we require that every candidate for a literary degree shall devote a considerable portion of his time to the mathematics, not for any practical purpose, but purely as a means of special intellectual culture. It surely cannot be inappropriate to inquire whether it actually produces the anticipated results.

"In the mathematics, our reasoning concerns nothing but the necessary relations of quantity, and therefore we arrive at absolute truth. A very small part of our practical reasoning is, however, of that character. We desire to have the truth, not concerning abstract conceptions, but concerning matters of fact, or that into which fact enters as a necessary element. Hence, were we to confine our reasoning to the mathematics, it may be doubted whether we should increase our power of general ratiocination. It has been frequently remarked, that persons who have addicted themselves exclusively to this science, have been singularly deficient in the reasoning power which is required in the several professions, and in the ordinary affairs of life. I have not perceived that original ability in young men was at all measured by proficiency in the mathematics. Men of decided talent generally succeed well in anything, and, of course, in abstract science. The general reasoning power is not more closely connected with special talent for mathematics, than with special talent for philology, philosophy, physics, or any other branch of learning."—pp. 343–345.

Although Dr. Wayland has evidently perused with great care the philosophical writings of Sir William Hamilton, and loses no opportunity of testifying the profoundest admiration for his genius, we find in the present work fewer traces of the peculiar views of the latter than might have been expected. On both perception and original suggestion, as already stated, he has followed the safer guidance of Stewart and Reid. In truth, the only thing of any moment which he has adopted from Sir William is his classification of the qualities of bodies, according to their objective, subjective, or objective-subjective character; and for this we think he will not receive the thanks of his pupils. To the greater number, we apprehend, the generalizations embodied in this classification will prove a stumbling-block, while to not a few its discrimina-

tions will, we fear, seem foolishness. Both are beyond the capacity of the ordinary college student.

Although well fitted for understanding and appreciating each other, the American President and the Scottish Professor possess minds cast in different moulds and characterized by different tendencies. In the one the moral predominates over the intellectual; in the other, the intellectual over the moral. The one seeks truth from a conviction of its inestimable value; the other, rather for the pleasure of the excitement attending the pursuit. "Fruit" is the motto of the one; "activity" and "life" are the watchwords of the other. Both have perfect mastery of their own minds. Both conceive with great strength and vividness. Both hold their conceptions with a steadiness that never wavers. Both mark with unerring precision their contents. Both know equally well, how to draw from them their several momenta. If the philosophic perceptions of Sir William are more varied and profound, those of Dr. Wayland are instinct with a deeper and more living earnestness. If the discriminations of the former are sharper and more penetrating, those of the latter follow with a finer sense the natural divisions of thought. If the former deals in larger, bolder generalizations, the latter conducts us to truths of greater importance,—of more immediate and practical value. As might be expected, both are occupied chiefly with principles. Both lay hold of them with a most vigorous grasp; both apply them with a bold hand; and both abide unshrinkingly by their consequences. The form, however, under which they most habitually contemplate general truths, and the direction in which their minds naturally move along them, is different. The one studies them chiefly in the abstract; the other in the concrete. For the one they have the most interest as collected in formulæ; for the other, as developed in facts. The one, taking an ordinary experience, seizes upon some contained truth, and, stripping it of its accessories, carries it up to the heights of an inaccessible generalization; the other takes this same truth, endows it with a bodily form, and, throwing around it the drapery of circumstance, places it before the eyes of all. The one "raises a mortal to the skies"; the other "draws an an-

gel down." Hence the different spheres of intellectual action in which they habitually and appropriately move. Criticism and argumentation are the peculiar province of the one; exposition and illustration, the chosen field of the other. The one discusses with pre-eminent ability the first truths lying at the foundations of intellectual philosophy; the other, taking these truths as granted, builds upon them with rare felicity the superstructure of the science.

The two works named at the head of this article present certain remarkable points of contrast. The subjects of which they treat are not more dissimilar than the mental tendencies and habits of their authors. The one is wary and cautious, avoiding as much as possible the problematical, and cleaving to that which is by universal consent true; the other is bold and speculative, occupying chiefly a region which is by most regarded only as the land of dreams and shadows, haunted everywhere by the ghosts of departed theories and slain hypotheses. The intellectual philosopher carefully examines his ground, and draws with the utmost precision lines of demarcation between the known and the unknown, — between that which is proved and that which is only rendered probable. It is the former that principally fixes his attention and interests him most strongly. Mere speculation has comparatively slight charms for him. Theories, however beautiful, do not attract him. He loves *terra firma* and keeps ever on it. The solid ground rings under every step. If he approach at any time its borders, it is not to peer into the surrounding darkness, but to set up indices that shall serve as guides to those who may follow him. With a courage equal to that of Milton's hero, and a spirit caught from the place whence he fell, the more adventurous physicist plants himself fearlessly on the shore of the unknown deep, and, with one Herculean effort throwing a bridge across the mighty void, opens a pathway to the sun, along which, in orderly procession, Nature's forces are seen continually passing and repassing.

And this is as it should be. Speculation in the metaphysics is not always a harmless amusement, as the wrecked faiths so thickly strewn along its path abundantly testify. In physics, it is not only safe, but in the highest degree useful.

It both stimulates inquiry and furnishes suggestions for guiding it. It is the mother of observation and experience, whence the entire family of the physical sciences derive their lineage. If the theory developed by Mr. Allen shall prove to be only a more potent hypothesis, which like Aaron's rod swallows up all others, it will still have done important service. It is over these hypotheses, assuming the semblance of realities and mistaken for them, that, from the time of Aristotle till now, science in its onward march has been continually stumbling. By setting aside the dogma of the four elements, Stahl did more for the advancement of chemistry than by all his direct labors. And it may be doubted whether Priestley by the discovery of oxygen rendered a service of greater value to the science, than Lavoisier by overthrowing the phlogistic theory.

Hypotheses, in the physical sciences, assist the mind in holding and retaining phenomena, and, when they are the prophetic suggestions of genius, furnish invaluable guides to investigation. It should be constantly remembered, however, that at best they are only suppositions which the next discovery may require to be laid aside. Facts more or less generalized constitute all that is permanent of these sciences. And these are permanent. The regulated succession of events in the natural world remains unchanged, whatever cause or causes we may suppose to determine it. The phenomena of combustion continue the same, whether Stahl or Lavoisier be allowed to account for them. Experiments on light, electricity, and magnetism disclose the same laws, whether we look to Newton or Leibnitz, to Du Fay or Franklin, to Descartes or Ampère, for their explanation. In the sciences, the ordinary rule in architecture is reversed. The facts support the substructure of hypotheses, and not the hypotheses the facts. The occurrence of physical events in an unvarying relation of antecedent and consequent is a truth independent of all theories, resting upon the sure basis of observation and induction. The machine-like regularity with which the procession of nature moves forward, the unbroken order of phenomena observed through all its realm, the exact conformity to rule at each step of its progress, is the great, the outstanding fact in aid of whose explanation all theories and all hypothe-

ses have been invented. Law, universal, persistent, without variableness or shadow of turning, regulating and determining all changes, but remaining itself for ever the same, — law, all-pervading and all-embracing, — inexorable and unalterable law, is the majestic and solemn idea unceasingly impressed upon the student of nature, whether in the laboratory he watch the play of affinities between invisible atoms, or in the fields of space trace the planetary bodies in their paths round the sun; whether he observe the ceaseless and ever-varying evolution of phenomena in the world around him, or recall from the graves of the buried past the marvellous events of which the earth has been the theatre. It is this omnipotent and omnipresent law, which, throwing its mighty chain around each one of the innumerable suns blazing in the far-off depths of ether, and at the same time including in its golden links the minutest particles of matter, binds the several parts of the universe into one stupendous whole, — it is this all-embracing law, that the physical sciences investigate; just in proportion as they disclose section after section of its vast ramifications, do they make real and permanent advances; and just in proportion as the hay and stubble of hypothesis are wrought into these sciences, will the builders suffer loss when the fire of true criticism shall try their works, or when the light of further discovery shall reveal them.

As the human mind has ever been prone to connect with observed phenomena certain explanatory suppositions, and as these suppositions have necessarily been modified from time to time, to meet demands made upon them by the disclosure of new facts, the mere general observer of the course of the sciences is not unfrequently led to look with distrust upon their teachings. The fixed and the variable, the merely hypothetical and the demonstrably true, are confounded, and together involved in common doubt. Light and slight notions of law itself are engendered. It is looked upon as in some sort factitious and conventional; or if its real character be recognized, it is regarded rather as a certain phase of events turned towards us, than as the mode of the Divine action; as existing with reference to man and for his benefit, rather than as having its seat in the bosom of God; as a regulative prin-

ciple adapting the flow of events to the endlessly diversified and ever-varying requirements of human interests, rather than as a direct efflux from Him who changeth not,— who is the same yesterday, to-day, and for ever.

In order to separate, therefore, from the pure element of law every extraneous ingredient, it may be well to recall several of the principal hypotheses which have been formed to account for the orderly succession of events in the outward world,— some one of which we suppose to be associated in the minds of most persons with the phenomenon. They may be divided into two classes, according as they do or do not suppose the intervention of material agencies.

I. The first class includes two varieties.

1. The first of these varieties supposes the elementary forms of matter to be eternal, and limits the exertion of the Divine power to educing from an original chaos the present order and harmony of the universe. This, although a favorite hypothesis among the ancients, and not without its advocates in modern times, is generally believed to be excluded by the teachings of the Hebrew and Christian Scriptures.

2. The second variety supposes matter to have been created as well as organized by God. It divides itself into two subordinate varieties, according as matter is believed to be endowed with inherent powers, or only to be fitted for receiving forces from without. The first of these sub-varieties presents two aspects, according as the inherent powers of matter are supposed to be self-sustained ; or to be dependent upon the unceasing exertion of the Divine will, directed, either generally to the material masses, or specifically to the individual atoms composing them. The former is the supposition usually adopted by natural philosophers, while the latter is commonly preferred by theologians. The second of these sub-varieties presents also two aspects, according as the forces affecting matter are supposed to be directly impressed upon it by an unremitting exertion of the Divine power, or to come from an impulse originally imparted to it when cast from the hand of the Creator. The latter is the theory unfolded, as we have seen, by Mr. Allen, in his *Philosophy of the Mechanics of Nature*.

II. The second class of hypotheses, dispensing with matter altogether, includes likewise two varieties, — one emerging still in realism and the other in idealism.

1. The first variety, which admits the reality of outward and local developments of force, but denies their dependence upon material causes, includes two subordinate varieties; one monotheistic, and the other pantheistic. The monotheistic sub-variety refers the displays of force usually ascribed to matter, to immediate, local, and voluntary exertions of the power of the Deity. These exertions are supposed to be so directed, timed, and measured as to evolve the phenomena of the outward world. The pantheistic sub-variety, rejecting the separate existence and proper personality of the Deity, supposes the so-called powers of matter to be inherent in the Divine substance, which is conceived not only as coextensive with the universe, but as actually constituting it.

2. The second variety contained in this class, which transfers the supposed phenomena of an outward world to the mind of the percipient, resolves itself into two subordinate varieties dependent upon the way in which the phenomena are conceived to be evolved. According to the first of these sub-varieties, the states of mind mistaken for perception are produced by the immediate agency of the Deity; according to the second, they are spontaneously evolved through the laws of the mental organism. Both of these forms of idealism, — the theistic and the egoistic, — although reckoning among their advocates names of the highest distinction in philosophy, are now generally admitted to be at variance with the deliverances of consciousness in sensible perception.

Such are some of the hypotheses by which the human mind has endeavored to account to itself for the regulated and orderly succession of events in the natural world. That adopted by Mr. Allen, and for the first time, so far as we know, articulately presented in his work, unites in the highest degree the attributes of simplicity and grandeur, and, if adequate and consistent with itself,* — of neither of which are we quite cer-

* We are inclined to think that the universally diffused electric fluid whose existence is assumed in the hypothesis will be found, on a careful analysis, to suppose properties discarded by it as incompatible with the nature of material existences. We

tain, — is to be preferred over all others. Next to it in simplicity and grandeur is the one commonly adopted, as we have said, by naturalists. This readily yields all the explanations demanded of it, and at the same time involves no contradictions. Two objections, however, have been urged against it, with greater or less force. In the first place, it is said that the supposition of inherent forces in matter is contrary to our conceptions of its nature. The natural reply to this would seem to be, Why not *alter* our conceptions of its nature? As we have no knowledge of matter in itself, as we learn its existence only through the powers manifested by it, why not modify our conceptions of it so as to include these powers? Again, it is said, that, if we concede to matter the possession of inherent powers, these must be supported by a constant exertion of the Divine will, — that the origination of independent existences, whether material or spiritual, with endowments self-sustained, is beyond the reach of creative power. On this point we do not see how it is possible to affirm or deny. Our ignorance of the whole matter is too absolute to justify even an opinion in reference to it. The subject is placed, as we think, in its true light by Dr. Wayland, in the following passage from the chapter on Original Suggestion.

“If there be a universal, all-pervading Cause, what is the nature of his agency? In material causation, is he the sole operator in every change, so that every event is an immediate act of the Deity, or the result of such an act? Or, on the other hand, has he constituted matter with such attributes and relations that all which we see is the necessary consequence of the original creation, from which the Creator has withdrawn, and over which he now exerts no agency? And, again, in spiritual changes, similar questions arise. Does the free-will of man act independently of any controlling agency of the Deity, or is the Deity the cause of spiritual change, as in the first supposition above in regard to matter? Or has he so created spirits that the changes of which we are conscious proceed by necessity from the elements of our original creation? These questions, and many more, arise from the conception of an universal, all-pervading, and all-powerful Cause.

“With respect to these inquiries, I would remark, in general, that I

would speak with diffidence, however, as we are not sure that we have arrived at the exact conception of the author on this point.

believe the most opposite answers to either of them can probably be proved to be true, by arguments which it would be difficult to confute; and that the clearest reasoning may lead us to results at variance with the simplest dictates of our moral and intellectual nature. To what conclusion, then, shall we arrive? I answer, to the belief that the subject is clearly beyond the reach of our understanding. The point in which the infinite and the finite come in contact has been, and must ever be, hidden from mortal eyes." — pp. 167, 168.

But we have recalled these different hypotheses, not for the purpose of subjecting them to the ordeal of criticism, or of pointing out reasons why one should be preferred rather than another, but to mark them all alike as hypotheses and nothing more, — to place the badge of their tribe upon them, in order that, if they at any time appear in our logical processes, we may recognize their true character. No argument can be built upon them. No inference, theological, philosophical, or practical, can be drawn from them. It is the great fact which they endeavor to explain, — the fact of an external world continually changing, never for two successive moments remaining the same, but in all its changes governed by invariable laws and ministering through them constantly to beneficent ends, — it is this great fact that must furnish the basis of all our reasonings; and just in proportion as we exclude every hypothetical element will be the reliableness of the conclusions derived from it.

But is the *persistence* of the laws governing external nature established on a sufficiently sure foundation to render it a safe ground of argument? Are we not here making an assumption that may vitiate the results of our logical processes? Although within the sphere of observation these laws continue unchanged, without that sphere may they not be subject to alteration or suspension? Although events in the natural world follow one another in an unbroken line of antecedents and consequents so far as the eye can trace them, beyond that limit may we not suppose a higher power at times to intervene and change the order of their succession? This ground has recently been taken by one * whose opinions on questions

* President Hitchcock. See Bibliotheca Sacra, October, 1854, Article IV.

in physical science have deservedly great weight. "It requires but a few years' experience in this world," it is said, "to satisfy any observing mind, that natural operations are carried on in a settled order; that the same causes in the same circumstances are invariably followed by the same effects. We call this uniformity of operation the course of nature; and the invariable connection between antecedent and consequent, we call the laws of nature. If we should see any new force coming in to disturb this settled order, we should call it a miracle. It might do this by a direct counteraction of nature's laws; and this is the common idea of a miracle. But if an unwonted force were added to those laws, the result would be a miracle; and so would a diminution or suspension of these actions; for in either case the effect would be out of the ordinary course of nature, and this we take to be the essential idea in a miracle. Perhaps the best and briefest definition of a miracle is, an event that cannot be explained by the laws of nature." If, however, the new force interposed do not come into view, if it only modify the observed course of events by affecting "some of the links of causation out of sight," then, it is said, there is no miracle, because there is no *visible* departure from the ordinary laws of nature, but all that is *seen* receives explanation from them. As interpositions of force thus circumstanced could never be known to us, so the absence of any indication of them affords no presumption against their actual occurrence. On the contrary, we are at liberty, it is maintained by this eminent philosopher, to suppose such interpositions, and to refer to them more or fewer of the changes transpiring in the world around us. Although the conversion of water into vapor without the supply of a certain quantity of caloric would, beneath the eye of the natural philosopher, be a miracle, taking place in mid-ocean, away from human observation, it would lose its miraculous character, and may, without violation of any of the rules of philosophizing, be supposed to occur. Although air in its expansions and contractions by change of temperature obey the most precise laws, so long as it is under the hand of the experimenter, it may cease to do so when, escaping from him, it finds its way into the depths of the atmos-

phere, where no mortal eye can follow it. There the winds may arise and take their course, wholly independent of these laws. Or if, instead of the ponderable, we would make the imponderable fluids the theatre of these interpositions, we may suppose the solar beams, when watched by no observer, to develop light and heat with unequal and varying degrees of intensity.

But why suppose deviation at all? Why limit the persistence of law to the narrow sphere of actual observation? Why not suppose the elements to act in the same manner, whether in sight or out of sight? Why not suppose Nature uniform and constant in her operations, seeing that whenever observed she is found to be so? As all the facts are confessedly — nay, by a fundamental requirement of the theory — explainable on that supposition, why not so explain them? Why introduce an unknown and purely hypothetical agency to account for what is already sufficiently explained from causes universally recognized and in actual and visible operation? Does not the rule of parsimony forbid it?

But admitting this obvious principle in philosophizing, we cannot know, it may be said, that such deviations do not in fact take place, as it is an express condition of their supposed occurrence that it be “out of sight.” We freely grant the impossibility of *knowledge* in reference to events under this category. But there may nevertheless be the best grounds for *belief*. The domain of demonstrative evidence is quite restricted. The number of truths absolutely known is comparatively small. The perceptions of sense, the intuitions of reason, and the deductions made from these, constitute the entire sum of human knowledge, in the stronger and technical sense of the term. All the great truths which either supply the conditions of our moral life, or furnish guides for its conduct, rest upon probable evidence. They are received by the mind on the ground of faith, and not of knowledge. But the assurance of belief, it should be remembered, may be as perfect as the assurance of knowledge. The conviction of certainty may in either case be limited only by the finite capabilities of the soul. We do not *know* that to-morrow’s sun will rise, but do we on this account doubt it? No man *knows*

that he was born, or that he will die; but of what two truths has he a stronger conviction? The recurrence of the seasons in their appointed order is expected with a confidence which knowledge could not increase. Any alteration of gravity, or the cessation in nature even for a single moment of this great force, is as little apprehended as the annihilation of time or space. The lecturer on chemical science proceeds to demonstrate the properties of oxygen or hydrogen or carbon, with as perfect assurance of finding them unchanged, as the mathematician those of the cube, square, or triangle. In all of these cases, however, the evidence is purely inductive, and the state of mind produced by it is only what in strictness of language is termed belief. But it is belief attended by a confidence as absolute and entire as could be inspired by the most perfect knowledge.

Now it is upon this same probable evidence, yet more cumulative, that we rest the persistence of physical laws. The induction here takes in the entire circle of the natural sciences. Every new discovery in them, has only added to the weight of evidence, and caused to be repeated anew words already echoed and re-echoed through every part of the universe,—law,—invariable, persistent law. It is in exchange for a truth thus supported, resting upon an induction thus broad and exceptionless, that we are offered a mere supposition, without a shadow of support from fact or analogy, incapable of direct refutation indeed, because beyond the sphere of possible knowledge.

The author of this hypothesis, whose labors for the enlargement of human knowledge in more than one of its branches have been so honorable to himself and his country, proposes it, we ought to say, for the purpose of relieving certain imagined theological difficulties. These difficulties he does not, however, himself feel. So far from it, he expressly declares the belief that, when experienced, they arise from limited views of the Divine character and government. He further distinctly concedes, that all the known facts are equally explained, and that all the requirements of religion and of its miraculous history are equally answered by the supposition of the uniform operation of natural laws. After these admis-

sions, we can hardly imagine why he should have placed, as he has done, the two suppositions in equipoise, unless it were from the laudable desire to save from offence some weaker brother.

There is a beautiful science, which, though but lately exhumed, now stands under the open sky, in the full light of day, disclosing foundations as solid, and rising in a superstructure as massive and as well proportioned, as its sister of the skies. All the natural sciences are represented in it. Some have furnished the cement for binding together its compact masonry, while others support and buttress it. On many a fair stone wrought into this noble structure is inscribed a name which every lover of American science reads with emotions of joy and pride. On the application, however, of the principle admitted by the distinguished naturalist, this proud monument to his fame, this stately edifice, in raising which so many strong hands have labored, sinks, as by the waving of a magician's wand, into the earth whence it rose. All that geology discloses of the past rests upon inductive evidence. Its alleged events occurred before man was placed upon the earth, and can be gathered only from memorials left in its rocky strata. Granite and graywacke, the shells of mollusks and the scales of fishes, trilobites and coprolites, bird tracks and saurian tracks, teeth and toe bones, are the interesting characters in which those memorials are written. Their interpretation, in every instance, proceeds upon the supposition of the stability, the constancy, the persistence of natural laws. Refuse to grant this postulate, and interpretation becomes impossible. Deny this inductive truth, and the noblest of the physical sciences resolves itself into a few disconnected and unmeaning facts. If Nature is to be trusted only so long as our eye is upon her, we must abandon all inquiries into the past. If beyond the sphere of observation the laws governing her operations may be modified, or suspended, or events may take place independently of them, what ground have we for a single geological inference? Why suppose the beds of bituminous and anthracite coal to be of vegetable origin? Why imagine that these vast bodies of solid carbon were once floating in the atmosphere, and

that they were gradually withdrawn from it by the leaves of plants? It is far more simple to suppose the carbon created just as we find it. Why dream of long ages of fishes and reptiles and mammals anterior to the appearance of man on the earth? Why suppose myriads of centuries to have been occupied in preparing a suitable abode for him who was to be lord of the terrestrial creation?

But if the inductive principle be so rigorously carried out, it may be asked, are not miracles in danger? will not they fall before it? We answer, No! a thousand times, no. It is this very persistence of law that makes a miracle when properly attested so impressive, and gives to the moral truths promulgated in connection with it their awful sanction. It should be remembered that it is not against facts testified to by competent witnesses, and known of all men, that we are pressing inductive inferences; but against mere suppositions, — suppositions, too, explaining nothing, and confessedly explaining nothing, — suppositions, moreover, studiously placed beyond the sphere of observation, where direct investigation is impossible, and where nothing but induction can reach them.

But is not the presumption from experience, it may be further asked, equally strong against interpositions in the moral world? Do we not find the changes of mind, as well as those of matter, following one another in a definite and fixed order? Are not the indications of law, invariable and persistent, as marked in the one as in the other? In an article in a late number of a contemporary journal, in which it is not difficult to recognize the graceful pen of its gifted editor,* the opinion is expressed, that on inductive grounds no distinction can be made between the two classes of phenomena. The question is regarded as "one of pure revelation." In neither case should we be at liberty to suppose interpositions unless the doctrine were directly taught in the Scriptures; while if so taught, the difficulties lying in its path are supposed to be no greater in one case than in the other. "The Scriptures assure us, that God operates on the soul of man by direct and supernatural interpositions of his power." "Unless it had

* Dr. Park. See *Bibliotheca Sacra*, Jan. 1855, Article VIII.

been revealed that God interposes in the sphere of mind, we should have been obliged to trust to the entire uniformity of all mental laws, and to withhold our faith from the theory of his spiritual interpositions. So unless it be revealed that God interposes in supernaturally counteracting some of the laws of matter, we must confide in the uniform operations of all natural laws, and must withhold our assent from the theory of his physical interpositions." We have no evidence, it is thought, of either closer or more constant relationship in the succession of material, than in the succession of spiritual phenomena. "Are not the operations of mind as regular as those of matter? May we not as easily explain the laws which lead to every particular volition, as the laws which lead to every particular rising of a wave, or every particular gust of wind?"

This accomplished theologian and scholar, whose love of truth, superior to all narrow prejudice, is equalled only by his rare powers of apprehending and unfolding it, would seem to overlook the important fact, that the winds and the waves are not the only theatre upon which the elements exhibit themselves. Were this so, we grant that the two cases would be parallel. But this same air and water which, subjected, on the uneven surface of the earth, to the conflicting impulses of gravity and solar heat,—the latter modified by a hundred local causes,—take on so varied and apparently so capricious movements, are found, when placed in circumstances admitting an exact measurement of the forces applied to them, to obey as precise laws as the planets in their revolutions about the sun. Gravity also, and the repulsive power of heat, when made, in like manner, the subjects of exact experiment, are found to be governed by invariable laws, which the language of mathematics alone can express with adequate precision. The same is equally true of all the elements, and of all the known forces acting upon them. The conditions under which they are placed being given,—and these, let it be remembered, are physical conditions, addressing the senses and capable of being accurately determined,—the conditions under which they are placed being given, we can foretell their behavior with as perfect exactitude and certainty as the

astronomer predicts an eclipse or a transit. The inference, therefore, that the elements, in evolving the changes of the outward world, obey fixed laws, rests upon no *a priori* presumption, no mere analogical evidence. In making it, we are simply reasoning from oxygen in the laboratory to oxygen in nature; from carbon in the laboratory to carbon in nature; from gravity in the apple of Newton to gravity in the solar system.

That there is nothing parallel to this, nothing in any way approaching or resembling it, in the case of mind, we hardly need say. No man can tell beforehand how his most familiar acquaintance will act in any given circumstances. No man can tell how he himself may act twenty-four hours hence under given circumstances. We do not say that the mental phenomena may not succeed one another in an unbroken line of antecedents and consequents. We only say that there is no proof, as in the analogous case of matter, that such is the fact. Even if the laws which determine human conduct were as fixed as those of material action, we could not from the nature of the case know it. The motives leading to action spring from sources so various, and many of them so latent,—sources without and sources within,—from character, itself the result of unnumbered antecedent influences,—from mood and from circumstance,—that we cannot be sure in any single instance that we recognize all the conditions of conduct. Among the unrecognized conditions may be an influence divinely interposed. We do not say that interposition is indicated by the observed facts; but we do say that the observed facts leave room for this supposition. No inference can be inductively drawn from them at variance with it.

Were there any subtle chemistry by which the soul could be resolved into component powers or faculties, and each of these be shown to obey, under all conditions, precise and definite laws, then might spiritual and material phenomena be placed in the same category in respect to interpositions. But until the means of such analysis and such demonstration shall be discovered, it is unphilosophical to confound them.

That the laws of mind are far more latent, if not less certain, than those of matter, would seem to be indicated by the very

unequal progress of knowledge in respect to them. The former were as well understood in the times of Plato and Demosthenes as they are at the present day. Not so the latter. Eloquence and the fine arts, founded upon a knowledge of the laws of mind, were in as advanced a state then as they are now. Not so the useful arts dependent upon a knowledge of the laws of matter. While the mysteries of external nature have been gradually, and for the last two or three centuries rapidly, clearing up, the same veil still rests upon the operations of mind. "The wind bloweth where it listeth, and thou hearest the sound thereof, but canst not tell whence it cometh, and whither it goeth," is now as apt a simile for illustrating spiritual phenomena, as it was when employed by omniscient wisdom nearly two thousand years ago.

The doctrine of physical interpositions, if taught in the Sacred Scriptures, would undoubtedly be sufficient to overbear the evidence from induction of the uniform operation of natural laws, in the same way as this evidence is overborne by testimony in the case of miracles. But placing the question on that ground, we should be entitled to claim that the teaching be clear and explicit in proportion to the difficulties attending the doctrine. Forms of expression authorizing a belief in spiritual interpositions might be deemed insufficient here; just as stronger proof is required to establish a miracle than to establish a fact not known to be out of the ordinary course of nature.

We are not quite certain that the acute metaphysician to whose opinions we have referred, from whom it is not often wise, and with whom it is never safe to differ, had in view, when expressing them, the distinction between matter and mind here indicated. There may possibly have been present to his thought another and very different distinction, which some have endeavored to establish on *a priori* grounds. Causation in the two, it is said, is different. While in matter it is necessary and consequently fixed, in the mind it is free, and therefore variable. Although the same matter must, under the same conditions, always act in the same way, this is not true of mind. Although two atoms of hydrogen or of carbon must in like circumstances act in like manner, two

spiritual essences in every way precisely alike, and placed in precisely similar circumstances, may act differently. That regular connection between antecedent and consequent, which obtains so uniformly in the natural world, not holding, with the same constancy at least, in the moral, interpositions, it is said, which occurring in the former would be miraculous, may take place in the latter without the disturbance of any law.

If it was this supposed difference in nature between material and spiritual causation that the learned Professor had in mind when penning the sentences above quoted, we agree with him that the distinction can hardly be maintained. The principle of causality, considered as an intellectual intuition, is wholly independent of experience. It knows neither matter nor mind as such. It affirms universally that every substance, every essence, whether material or spiritual, must, as cause, act in the same manner, under the same circumstances. It affirms universally, we say, or it affirms not at all.

But the position which we have sought to make good is so unlike this, that we should have deemed reference to it unnecessary, had we not known the two views to be confounded. *That* recognizes fully the metaphysical principle of causality; *this* violates it. *That* supposes the mind in its ordinary operations to be governed by law as uniformly and strictly as matter; *this* affirms a radical difference, in respect to regularity and constancy of action, between them. *That* asserts, that, as the conditions of spiritual causation are always to a greater or less extent hidden from view, and are never all known to us, so we can never be certain that a Divine influence specially interposed is not one of them, — we can by no form of experiment exclude in a single instance such a supposition. *This* declares, that as the will of a free spirit is independent of law, so, did we in every case know all the antecedents to volition, it would still be impossible to exclude in any the supposition of special Divine interposition.

If the Supreme Ruler of the universe see fit to interpose and change the course of events in the moral world, why should he not, it is sometimes asked, do the same in the

natural world? "If the welfare of man is sufficiently important to justify his direct mental influence, why is not the same welfare important enough to justify his direct physical influence?" Is the setting aside of a material law more difficult to omnipotence, than the suspension of a spiritual?

In reply to this, we would in the first place say, that, for reasons already stated, we are bound to proceed on the supposition of the uniform and constant operation of natural laws, until we have evidence to the contrary. The burden of proof clearly lies upon those who assert the opposite doctrine. In the second place, we would submit that in no case are we entitled to judge of the mode of the Divine government — we say *mode*, not *ends* — by what seems to us fit or proper, or by what we deem to be easy to a being of unlimited power. All suppositions resting upon such a basis should be at once and for ever banished from our reasonings on this subject. We have here no *a priori* knowledge, no intuitions, no moral instincts, enabling us to form judgments independently of experience. What is the mode of the Divine government? is the only proper question to ask, — the only question, in truth, which the human mind can ask. Having arrived at an answer more or less satisfactory from the various sources of knowledge open to us, we may then seek to discover the reasons which led Infinite Wisdom and Goodness to adopt the actual mode of government, — or, in other words, to find in that mode illustrations and proofs of these Divine attributes.

The natural history of the lower orders of the animal creation throws light upon the manner in which it has pleased the Supreme Being to administer his providential government, at least in one of its departments. Every species of animal, as naturalists inform us, has its *habitat*, or place of residence, from which it never voluntarily wanders. Within the limits of this *habitat*, each individual of the species finds itself holding the most definite and precise relations to the surrounding elements. Upon these relations is the continuance of its life dependent. Nay, its organic and physical life is made up of a continued series of actions and reactions taking place between it and the surrounding elements, through these relations.

Now there are two ways in which we may conceive these necessary relations to be established. We may suppose the individual animal to be stationary and passive, and the elements, forsaking their accustomed modes of action, to bend in unceasing ministry to it; or we may suppose the animal to be endowed with appropriate organs, senses, and instincts, and the relations essential to life to be in this way established and maintained. The latter is the plan which the Divine wisdom has adopted. In the constitution of every one of the innumerable beings which people our globe, there is embodied an assemblage of provisions organic and spiritual, precisely adapting it to the physical conditions under which it exists, and rendering these conditions as unceasingly tributary to its welfare as if their ministrations were direct and personal. The different forms of locomotive apparatus—all holding relation to gravity as the force to be overcome by them—with which the inhabitants of air, earth, and water are supplied, would alone furnish study for a lifetime. Equally varied are the organs of the internal or vegetative life, all of which still have relation more or less immediate to great and permanent laws. The instincts and appetites which always accompany these structural endowments, as necessary for securing the ends proposed in them, present a corresponding variety of character throughout the whole animal world. All of these innumerable and endlessly diversified provisions, instinctive as well as structural, are incessantly ministering to individual safety and enjoyment. They are so many special providences, designed each for the good of the particular being with which it is connected. In this department of his government, therefore, we perceive that the Supreme Being has seen fit to provide for the welfare of the individual by placing it, through appropriate organs and instincts, in such relations to the great laws of nature—his general providences—that these may be immediately tributary to its happy existence, without departure from a stern and unbending constancy.

If we turn to that natural government under which man is placed, as a mere inhabitant of this world, we find that the same plan has been adopted. The only difference is, that

intelligence here supplies the more certain, though at the same time the more limited, guidance of instinct. Through this and his more generalized bodily structure, he is brought into relations to external nature—every one of which becomes a channel of benefits—incomparably more numerous and diversified than any of the lower animals. Air, earth, and ocean minister alike to his sustenance and enjoyment. And in proportion as he advances in knowledge, becomes acquainted with the laws governing the world around him, and places himself in the proper relations to them, is the range of his activities and enjoyments widened. To civilized and educated man,—to man possessing the resources of science and the mechanic arts,—every thing in nature pays tribute. The elements themselves, within their prescribed spheres of action, vie with one another in doing him service.

But man is not simply an inhabitant of this world. He is in process of training for another. Besides ministering to his mere physical well-being, the circumstances in which he is placed are designed to be the means of spiritual culture. To fit him for this higher, educational government which is extended over him, in addition to an intellectual, there have been conferred upon him the endowments of a moral and religious nature. Under the guidance and through the influence of these, he may receive benefit—the fact of the reception, however, depending as before upon himself—from every possible occurrence in life. Events in themselves disastrous, which no human prescience could foresee, or which, if foreseen, no human power could have averted, may still subserve the purposes of important and needed discipline.

If, however, these provisions connected with man's spiritual nature should, from any cause, fail to secure to him all the intended benefits of his present disciplinary state, and it should please the Divine wisdom and goodness to make some new and further provision, of what nature should we expect it to be? Judging from what we have thus far observed, would the remedy probably be external or internal? The question has been answered. Christianity has been given to strengthen by new motives, and enforce by higher sanctions, man's

moral and religious sentiments, while his external relations, except so far as created by himself, have remained unaltered.

If in addition to all these provisions, in order fully to secure the ends proposed in them, direct and special interposition should prove necessary, of what character, reasoning still from the observed plan of the Divine government, might we expect these to be? and where would they probably occur? Should we look for changes without? or for superadded guidance and strength within? The latter undoubtedly. To this all analogy points. By this all the ends of interposition, whether protective or disciplinary, are equally accomplished. For this the investigations of science leave room, without supposing any known law violated. And above all, and more than all, this is directly taught in the Sacred Scriptures. On the other hand, the supposition of an adjustment of the relations of the individual to the outward world by external interpositions, is opposed by inductive evidence as strong as that which causes us to look for the rising of to-morrow's sun, or to expect our own decease; it is contrary to all that we know of the Divine government, and is, moreover, without support, as will generally be admitted, from the teachings of Scripture. In these circumstances, is it philosophical to hold it? Ought it to be retained, merely because it is impossible to disprove it, — impossible to *know* that, "without the sphere of human vision," between "some of the links of causation out of sight," physical interpositions do not occur? On such a ground, should the inductive teachings of all science and of the whole of human experience, as well as the strongest and most direct analogies, be set aside? But we will not, we need not, pursue the subject further.*

* Having learned, we have said, from the various sources of knowledge open to us, the actual mode of the Divine government, we may reverently and without rebuke seek for the reasons which determined its adoption. The inquiry in its whole extent we suppose to lie beyond the compass of the human intelligence. To the question, why God works by means and instruments, or if not by means and instruments, yet in conformity to modes and rules, equally limiting the manifestations of his energy, — why he makes the welfare of his creatures dependent upon their own exertions and upon external agencies, instead of bestowing directly the good which his benevolence has designed for them, — we do not know that any other answer can be given, than that such is his sovereign pleasure. But this fundamental fact being recognized, it is not difficult to see why the arrangements of his providence should

Having separated from the simple fact of law the different forms of hypothesis that have been connected with it, and having determined, as far as possible, its length and breadth and constancy, it was our intention to inquire what consequences, theological, philosophical, and practical, legitimately flow from it. We designed more particularly to show that the supposition of the uniform and undisturbed operation of natural laws touches only the *mode* of God's government, and not the government itself, or our relations to him under it. So far as we are concerned, it is wholly immaterial whether he bestows upon us a particular good, through some change in the course of outward events, or by so placing us and disposing our spirits that we may receive the intended benefit without external interposition. The obligation to gratitude and love, the grounds for confidence and trust, as well as the propriety and duty of looking to him for desired blessings, continue precisely the same on either supposition.

We purposed also to inquire how far, and in what circumstances, we may be authorized to ascribe to specific designs events occurring in the ordinary course of nature. Were these events isolated and independent in their origin, and did their influence extend only to the individual or individuals directly and principally affected by them, then we should in every instance be justified in assigning a personal interpretation. But standing as they do, in immediate relation to the laws under which they have arisen, and connected indirectly, it may be, with numerous other and perhaps higher ends provided for under those laws, the problem of the Divine purpose in any particular event becomes more embarrassed, and its

be as they are. This primary inquiry being disposed of, the only remaining question is a very simple one. It is in truth merely this: whether in the accomplishment of his purposes the general shall bend to the particular, and in so doing cease to be general; or the particular be conformed to the general; — whether the laws of external nature shall accommodate themselves to the exigencies of the individual; or the exigencies of the individual be provided for in conformity to the laws of external nature; — whether, on the approach of winter, the “unforgotten,” still “cared for” sparrow, impelled by an unerring instinct, shall wing its way to a Southern home; or a Southern home be brought to the sparrow; — whether the pious invalid, whose life is precious in the sight of his Heavenly Father, shall be guided by an invisible hand to some friendly shelter; or the cloud, laden with watery treasures, be turned from a district in perishing need of them.

solution is attended with greater difficulty. As subsidiary to this inquiry, we intended to examine generally the doctrine of final causes,—to see whether *teleology* be in fact a possible science, or whether, like *etiology*, the supposed science of efficient causes, it occupies a region unexplored by the human faculties,—whether the human mind be not, like the fabled Antæus, bereft of its strength when off the solid ground of facts. And if it should prove on examination, as we believe it would, that there are in man's spiritual nature, and in the constitution of the outward world, real foundations for the science, we proposed to seek for certain principles which might serve as guides in interpreting its phenomena. But we have already extended our discussions so far, that we must leave these inquiries for the present. We may possibly return to them hereafter.

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- ART. VIII.—1. *Travels in Europe and the East: a Year in England, Scotland, Ireland, Wales, France, Belgium, Holland, Germany, Austria, Italy, Greece, Turkey, Syria, Palestine, and Egypt.* By SAMUEL IRENÆUS PRIME. With Engravings. New York: Harper and Brothers. 1855. 2 vols. 12mo. pp. 405, 440.
2. *Visits to European Celebrities.* By WILLIAM B. SPRAGUE, D. D. Boston: Gould and Lincoln. 1855. 12mo. pp. 305.
3. *Letters Æsthetic, Social, and Moral, written from Europe, Egypt, and Palestine.* By THOMAS C. UPHAM, Professor of Mental and Moral Philosophy in Bowdoin College. Brunswick. 1855. 12mo. pp. 586.

THE contents of these works first saw the light, as letters from their respective authors, in the columns of religious newspapers; and we rejoice in the credit which their re-issue in a permanent form cannot but reflect on so influential a department of periodical literature. This circumstance, and the fact that they are, all three, records of travel, in part over the same ground, have induced us to group them together.